Sasaki, C.   A new field-mouse in Japan.   (1904)

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A New Field-mouse in Japan.

By

Prof. Chujiro Sasaki, *Rigakuhakushi.*

With Plate IX.

From the Bulletin of the College of Agriculture, Tokyo Imperial University, Japan. Vol. VI, pages 51—55.

1904.

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E. L. MARK

A New Field-mouse in Japan.

BY

Prof. C. Sasaki, *Rigakuhakushi.*
Agricultural College, Imperial University, Tokyo, Japan.

May 1903.

(With Plate IX.)

Four years ago, field-mice made their appearance in the prefecture of Ibaraki lying north-east from Tokyo, and the injuries to crops extended not only over the whole prefecture, but also into the neighbouring provinces. In 1900, Dr. S. Onugi[1] and Mr. K. Sanui made some observations on their habits and have carried on their experiments for annihilating them by the inoculation of the so-called mouse typhusbacillus. In January 1901, Dr. S. Onugi[2] from a study of the characters of the mice and pointing out the differences between the latter and the house-rat, has concluded that the mice was probably of the same species with Arvicola subterraneous, Selys. In February of the same year, I also visited the above stated prefecture for the purpose of studying the characters and habits of the mice and made public my results in the Journal of the Agricultural Society of Japan, No. 235.

In 1902, Prof. Y. Kozai[3] after two years' experiments for killing the mice by means of Mereskowsky's Bacillus, has obtained a satisfactory result, and at present it is practically employed largely in various provinces.

In the following lines, I will state the results of my studies upon the characters and habits of the hateful mice.

Characters: Body rather small, but plump. Winter pelage: dorsally rusty greyish brown, ventrally greyish white (the dorsal hairs are greyish with rusty yellowish ends, while the ventral are greyish with whitish ends). There is no marked line laterally between the dorsal and ventral colorations. Tail rather short, covered sparsely with hairs, its dorsal hairs dark grey, and the ventral greyish white. Limbs light greyish brown. Snout rather blunt; eyes dark greyish brown; the upper incisors not projecting beyond the snout. Ears nearly quadrangular (length 13 mm. breadth 8 mm.), about $^1/_2$ as long as the head, with a few hairs on the inner side, and their outer side as well as the free edges are covered with greyish hairs. They are not completely concealed within the hairs of the head. Incisors yellowish brown on the outer side (Figs. 1; 1, a. Pl. IX.). Hip glands are large and oval. Plantar tubercles 5 (Figs. 3; 3, a. Pl. IX.). Mammœ 8, inguinal 2—2; pectoral 2—2.

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[1] Journal of the Agricultural society of Japan, No. 224, 1900.

[2] Ditto „ „ „ „ „ „ No. 233, 1901.

[3] The Bulletin of the College of Agriculture, Tokyo, Imp. Univ. Vol. IV. No. 5.

Skull long, smooth and flattened; auditory bulla comparatively large, bulky, and oval in shape (Fig. 2. Pl. IX.). Incisive foramina is very small but distinct. Of the upper jaw, 1st. molar with 4 closed triangles and an anterior loop; 2nd. with three closed triangles, and a posterior triangle with an open base; 3rd. with 3 closed triangles with an anterior and a posterior loop, with 4 inner and 3 outer salient angles; of the lower jaw, 1st. molar with 5 closed triangles, an anterior trefoil and a posterior loop; 2nd. with four triangles and a posterior loop, each triangle on the one side confluent with that on the other; 3rd. with 3 long inner and 3 short outer salient angles (Figs. 4; 4, a. Pl. IX.).

In general aspects and characters, the present species resembles to a certain degree Arvicola subterraneous, Selys., which is described by Mrs. H. Leunis[1] and J. R. Bos.[2]; but it differs in the coloration of the fur, length of the body and tail as well as the size of the ear. This leads us to give it a new name Arvicola hatanedzumi.[3]

Habits: The field mice are mostly found during winter in the farms of wheat, tea, mulberry trees and other plantations. In the day time, they conceal themselves within the subterranean nests, while at night they come out from their hiding places and search for food. If we feed the mice in an enclosure, they remain quiet during the day, but as night approaches they become very active and emit a peculiar cry.

The nest of the mice are usually constructed on the dikes separating rice field or mounds, elevated farms scattered over the same field or along road-sides directly exposed to sun-shine ; and moreover even on a plain farm on which various stuffs of halms, stalks or roots of the farms are piled up. The nests are constructed in an oval hollow, excavated usually at the depth of five to seven inches below the ground. Its walls are provided with one or more opening, which communicate with tunnels running in various directions and extending to various distances, where the mice may be able to procure their food. These tunnels open at various distances to the surface of the ground by roundish holes, which serve as a clue to the general direction of the tunnels. The tunnels extend as far as where the food plants are to be detected ; and close to the wheat, tea, mulberry and other farms which are preferred by the mice, there open usually one or more holes. In the case of wheat, the mice come out to the surface from the holes opening close by, cut off the stalks or leaves at a height of less than an inch above the ground, and eat them on the spot, or else they carry them to their nests; thus the holes and newly cut stalks or leaves of the wheat indicate, without doubt, the presence of the mice. But in the case of tea and mulberry trees, the mice do injury only to the root by gnawing the cortical layer leaving series of traces of their teeth on the surface of the woody layer (Fig. 5. Pl. IX.).

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[1] H. Leunis, Synopsis der Thierkunde Band I.

[2] R. Bos, Tierische Schädlinge u. Nützlinge.

[3] Hatanedzumi (Jap.) means Farm mouse.

The nests (Fig. 6. Pl. IX.) are generally oval (length about 22 cm., breadth 14 cm.), or nearly roundish, more or less flattened, consist of a single chamber. The materials employed for the construction of the nests are generally fine strips of straw or fibrous roots of various plants. The inner layer of the nest consists of a much finer and softer stuff than the outer. The nest is provided with the same number of openings as the hollow within which it lies, thus giving the mice free passage towards the tunnels. Close to the hollow in which the nest lies, is excavated another small chamber or hollow mainly used for preserving food. The principal food stuffs, so far as I could find in the store chamber, are strips of the roots of tea or mulberry trees, roots of Lappa major, Gærtn., Daucus carota, L., the stalks or leaves of the tobacco plant, ears of the rice plant and others. The roots are cut off nearly to an equal length and piled up horizontally in a regular manner in the store chamber ; and especially the ears of the rice plant are equally cut off to the length of four to five inches, and then they are piled up horizontally by arranging regularly the grain bearing end of each ear on the same side so as nearly to fill the chamber.

Generally a single nest is constructed at one spot, but sometimes more are found. The interior of the nest is always very clean and free from dusts or excrements.

On the surface of the ground below which a nest lies, usually open one or more holes, and in the case of the nests formed beneath the inclined surface of dykes, boundaries &c., the holes are not far removed from the nest, and open always more or less below the level of the nest so as to avoid the entrance of rain water. If the nests are constructed below the inclined surface as stated above, the particles of soils will flow out from the holes on the same surface. When the particles of soils look fresh, the mice are almost always present in the nest, while if not fresh they are usually absent, thus we can easily judge of the presence or absence of the mice by the appearance of the particles.

In winter, there may be found several individuals in a single nest ; but during the breeding season, it is most probable that a single pair inhabits a single nest.

In capturing the mice, if we dig out the nest slowly, it is always very difficult to find them, for by their acute sense of hearing, they will soon notice the approach of men, and escape through the tunnels running out from the nest. But after having located the nest, let several persons dig out the ground around the nest at the same time at a distance of a few feet from the latter so as not to allow their escape through the tunnels, then the mice can be easily captured.

The pairing season of the mice is not yet accurately known, but they seem to breed several times during the warmer months of the year. They are herbivorous in habit, but when starved they do not hesitate to devour their weaker and inactive mates.

Explanation of Plate IX.

(Figs. 1; 1, a, 6. drawn by K. Yokoyama)

Fig. 1. Arvicola hatanedzumi, Sasaki 1/1.
Fig. 1, a. Ditto.
Fig. 2. Skull of ditto ♀ 1/1.
Fig. 3. Right fore foot 1/1.
Fig. 3, a. Right hind foot 1/1.
Fig. 4. Molar series of right upper jaw 4/1.
Fig. 4, a. Ditto of left lower jaw 4/1.
Fig. 5. Root of mulberry tree with the trace of teeth;
a blackish line shows the level of ground.
Fig. 6. Nest with two openings 1/3.

Fig. 1.

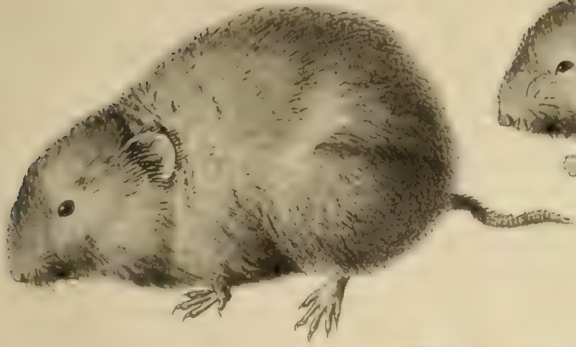


Fig. 1, *a*

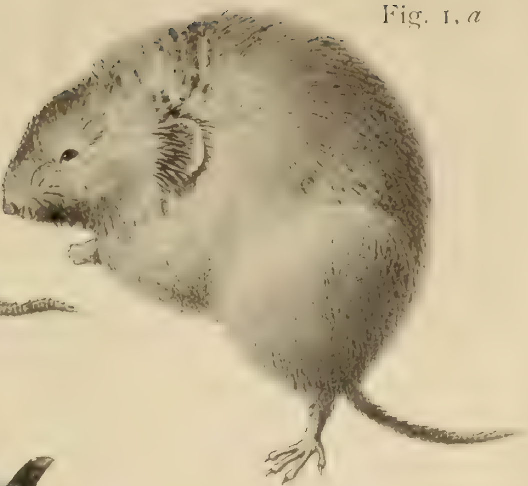


Fig. 2

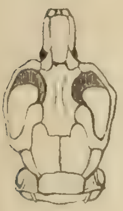


Fig. 5.

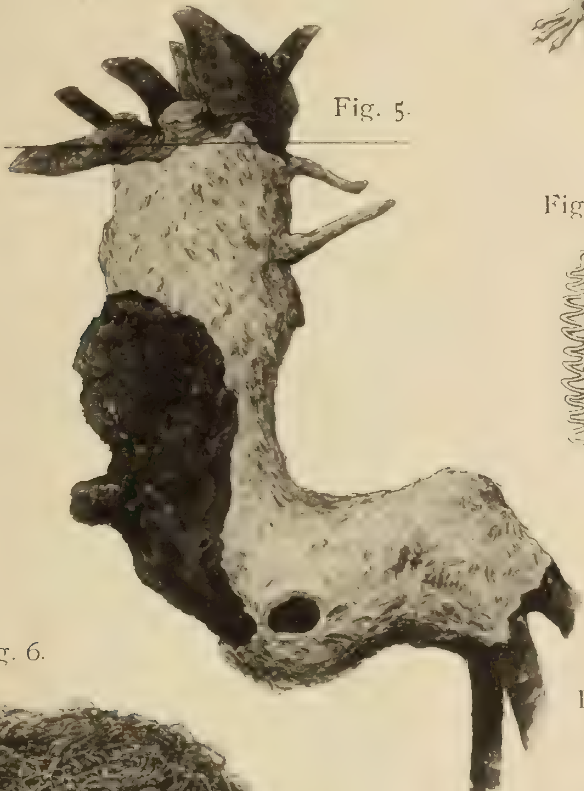


Fig. 4.

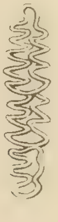


Fig. 4, *a*

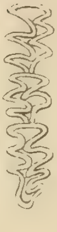


Fig. 6.

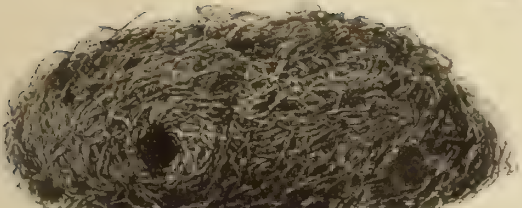


Fig. 3.

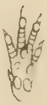
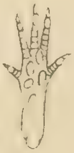


Fig. 3, *a*



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